Figure 1 - Component Design Approach

Payment Component

Micro Structure Definition:

Internal Instance Variables
date: Simple Date
currency: Simple Symbol
notional: Simple Float
accrual: Accrual Interface

Interface Definitions:

1) Accrual Interface supports:
   - start date
   - end date
   - rate
   - day count
   - processing interface

2) Processing interface (required)
   - valueEventInProcessor:

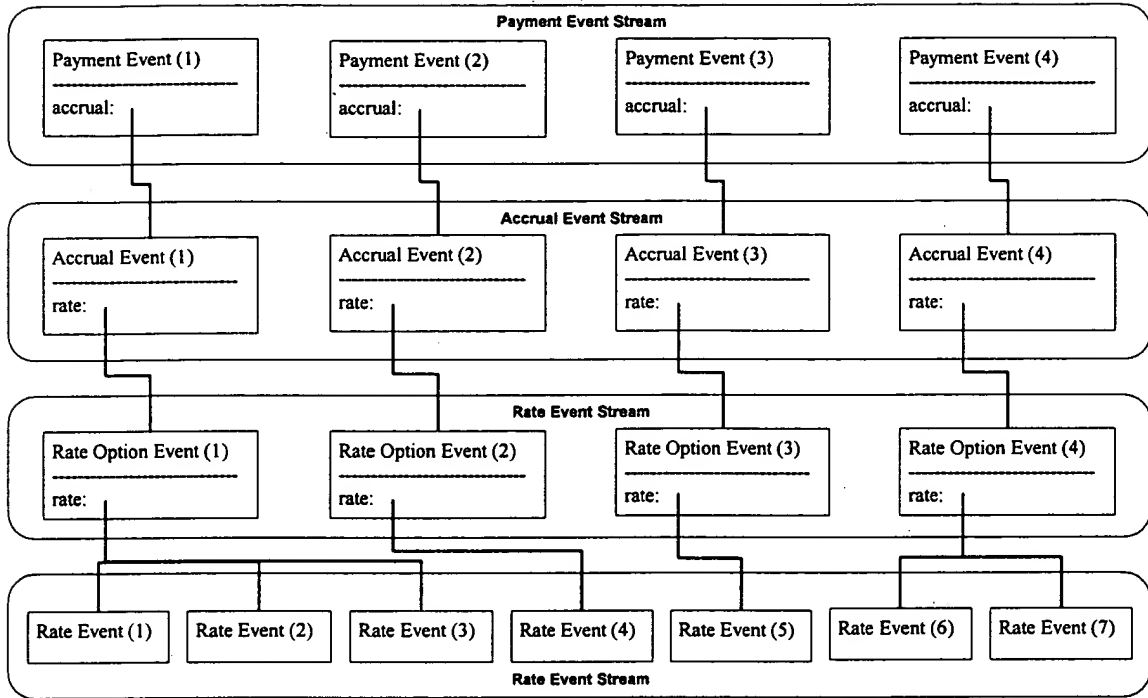**Figure 2 - Micro Structure of a Payment Component**

Figure 3 - Macro Structure Example
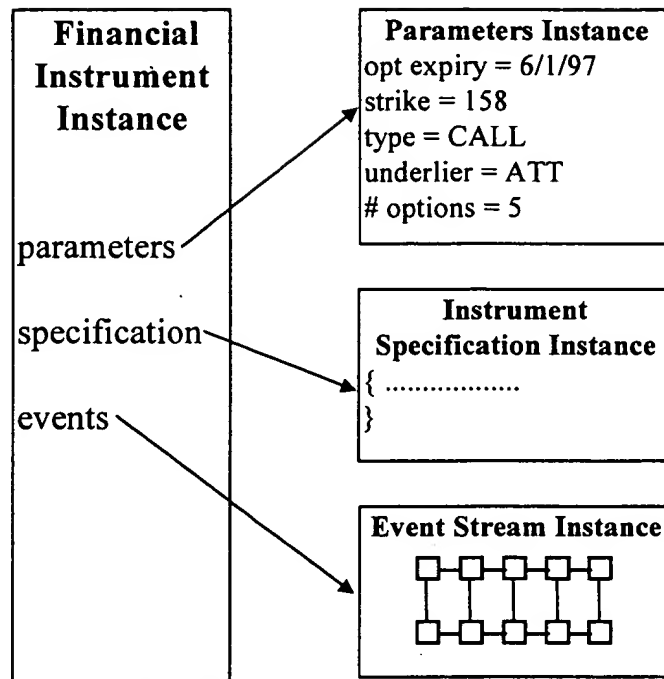
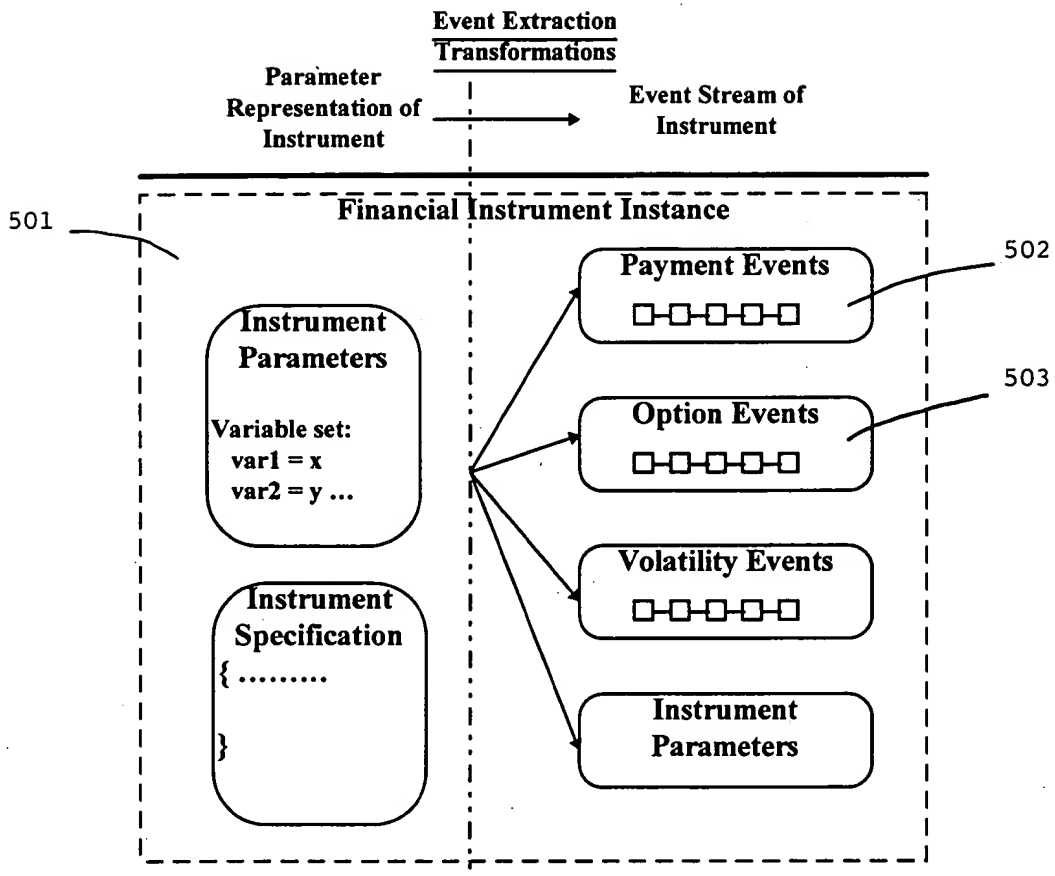**Figure 4 - Sample Financial Instrument Structure: Equity Option**

Figure 5 - Financial Instrument Structure Relationships

Figure 6 - Alternative Instrument Parameters Implementations

Figure 7 - Event Stream Representation

Payment Event Stream

Payment Event (1)	Payment Event (2)	Payment Event (3)	Payment Event (4)
date: 3Jun96 currency: USD notional: 1,000,000 accrual:	date: 3Jan97 currency: USD notional: 1,000,000 accrual:	date: 3Jun97 currency: USD notional: 1,000,000 accrual:	date: 3Jan98 currency: USD notional: 1,000,000 accrual:

Accrual Event Stream

Accrual Event (1)	Accrual Event (2)	Accrual Event (3)	Accrual Event (4)
start date: 1Jan96 end date: 1Jun96 dayCount 30/360 rate:	start date: 1Jun96 end date: 1Jan97 dayCount 30/360 rate:	start date: 1Jan97 end date: 1Jun97 dayCount 30/360 rate:	start date: 1Jun97 end date: 1Jan98 dayCount 30/360 rate:

Rate Event Stream

Rate Event (1)	Rate Event (2)	Rate Event (3)	Rate Event (4)
date: 1Jan96 rate type: 3mo LIBOR	date: 1Jun96 rate type: 3mo LIBOR	date: 1Jan97 rate type: 3mo LIBOR	date: 1Jun97 rate type: 3mo LIBOR

Figure 8 - Simple Swap Event Stream

Payment Event Stream

Payment Event (1)	Payment Event (2)	Payment Event (3)	Payment Event (4)
------------------------	------------------------	------------------------	------------------------
date: 3Jun96	date: 3Jan97	date: 3Jun97	date: 3Jan98
currency: USD	currency: USD	currency: USD	currency: USD
notional: 1,000,000	notional: 1,000,000	notional: 1,000,000	notional: 1,000,000
accrual:	accrual:	accrual:	accrual:

Accrual Event Stream

Accrual Event (1)	Accrual Event (2)	Accrual Event (3)	Accrual Event (4)
------------------------	------------------------	------------------------	------------------------
start date: 1Jan96	start date: 1Jun96	start date: 1Jan97	start date: 1Jun97
end date: 1Jun96	end date: 1Jan97	end date: 1Jun97	end date: 1Jan98
dayCount 30/360	dayCount 30/360	dayCount 30/360	dayCount 30/360
rate:	rate:	rate:	rate:

Option Rate Event Stream

Rate Option Event (1)	Rate Option Event (2)	Rate Option Event (3)	Rate Option Event (4)
------------------------	------------------------	------------------------	------------------------
date: 1Jan96	date: 1Jun96	date: 1Jan97	date: 1Jun97
strike: 5%	strike: 5%	strike: 5%	strike: 5%
rate:	rate:	rate:	rate:

Rate Event Stream

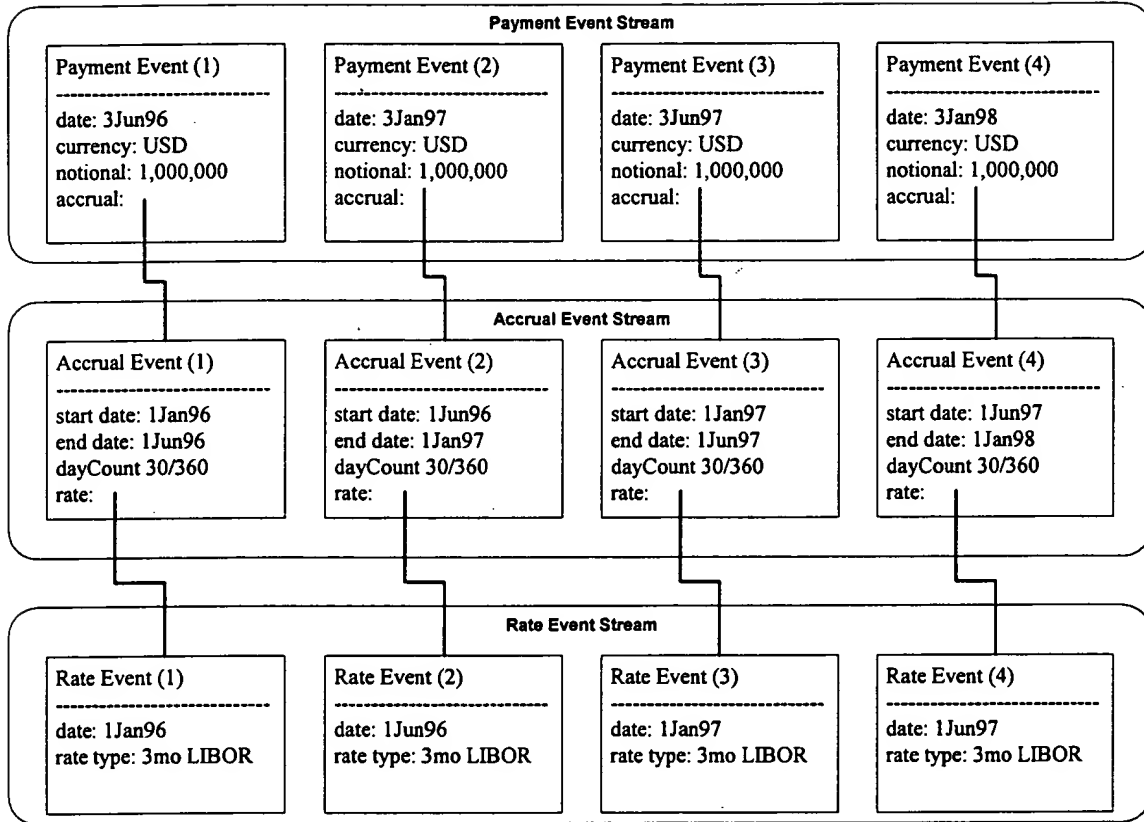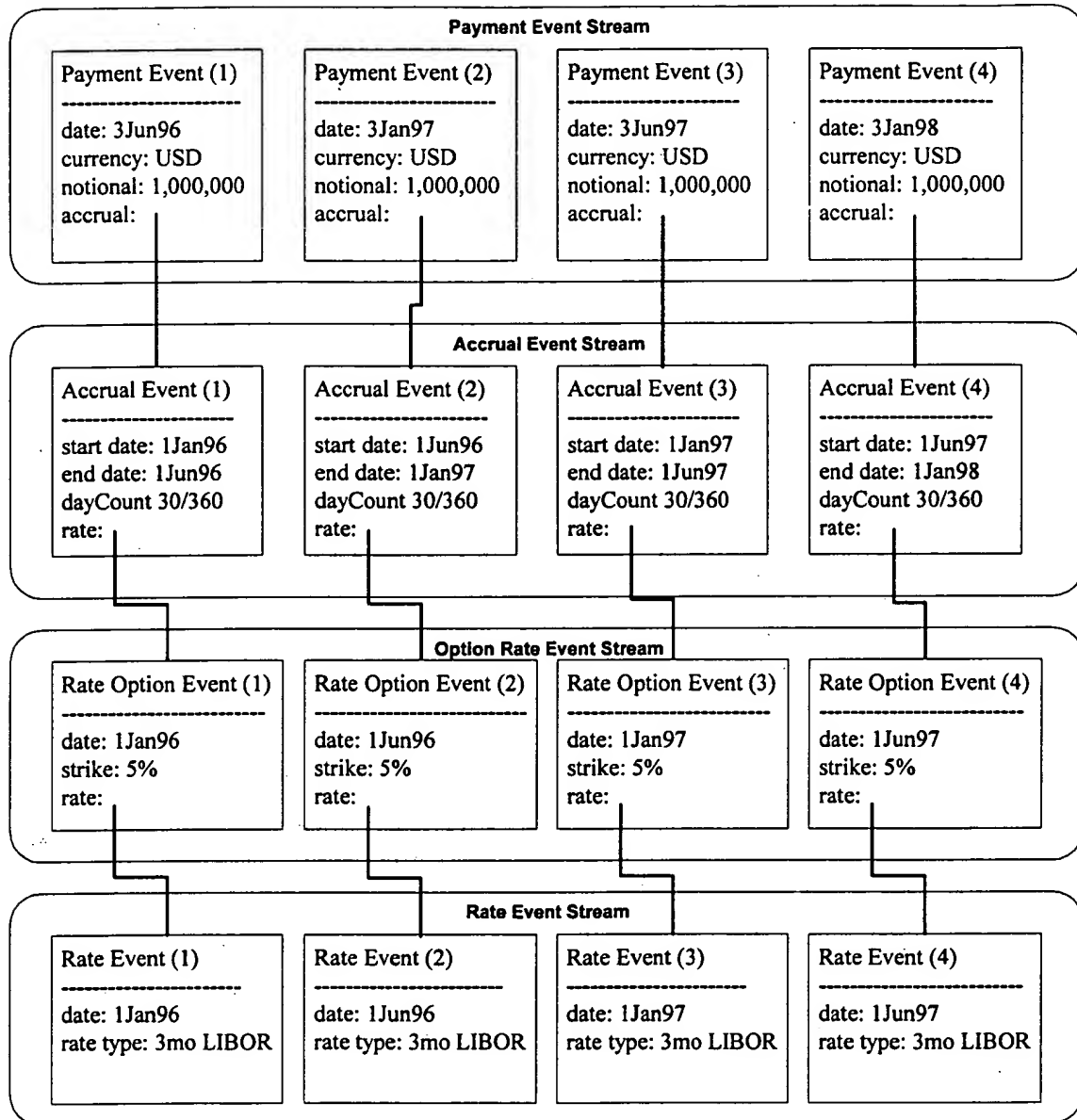| Rate Event (1)	Rate Event (2)	Rate Event (3)	Rate Event (4)
------------------------	------------------------	------------------------	------------------------
date: 1Jan96	date: 1Jun96	date: 1Jan97	date: 1Jun97
rate type: 3mo LIBOR	rate type: 3mo LIBOR	rate type: 3mo LIBOR	rate type: 3mo LIBOR

Figure 9 - Simple Option Event Stream Representation

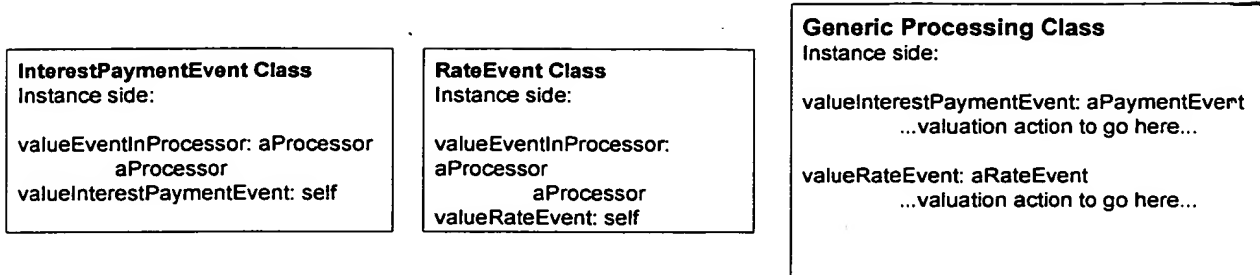Figure 10 - Example Processing Class Hierarchy

Implemented Behaviour

InterestPaymentEvent Class
Instance side:

valueEventInProcessor: aProcessor
        aProcessor
valueInterestPaymentEvent: self

RateEvent Class
Instance side:

valueEventInProcessor:
aProcessor
        aProcessor
valueRateEvent: self

Generic Processing Class
Instance side:

valueInterestPaymentEvent: aPaymentEvent
    ...valuation action to go here...

valueRateEvent: aRateEvent
    ...valuation action to go here...

Figure 11 - Methods implemented on Event and Processing Classes

Generic Processing of
InterestPaymentEvent Instance

need to process this event

InterestPaymentEvent Instance

valueEventInProcessor: self

valueInterestPaymentEvent: self

GenericeProcessor Instance

returns results of valuation for an instance of an interest payment event

Figure 12 - Double Dispatch Processing for Interest Payment Event

Generic Processing of
InterestPaymentEvent Instance

need to process this event

rate valueEventInProcessor: self

InterestPaymentEvent Instance

valueInterestPaymentEvent: self

valueInterestPaymentEvent

self.rate valueEventInProcessor: self

rate value

RateEvent Instance

valueRatePaymentEvent: self

valueRateEvent

GenericeProcessor Instance

VALUE OF INTEREST PAYMENT EVENT

Figure 13 - Nested Double Dispatch

Payment Event (1)
----
date: 3Jun96
currency: USD
notional: 1,000,000
accrual:

Accrual Event (1)
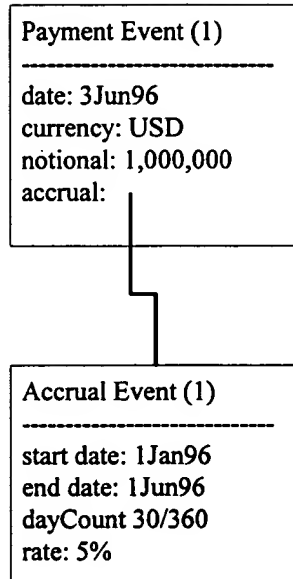------------------------------
start date: 1Jan96
end date: 1Jun96
dayCount 30/360
rate: 5%

Figure 14 - Single Fixed Rate Payment Event